**Pre-Calculus 12B Function Toolkit Project**

**Format:**

1. Title page.
2. Table of Contents.
3. Numbered pages.
4. Typed theory.
5. Hand drawn, pencil graphs only.
6. No cutting and pasting.
7. Works cited (OR IT WILL NOT BE EVALUATED)
8. 3 ringed binder.
9. Page protectors.

**Free online word processing suggestions:** Open Office, Google Docs

**Content:**

The focus of the Pre-Calculus courses in high school is the study of functions. This project is designed to show your understanding and application of them. If done well it can serve as an excellent reference for the study of Calculus.

For each of the functions written on the rubric, you will present the following:

1. The **basic graph** and equation with a summary of the **characteristics**, key points, asymptotes, domain, range etc. of each function.
2. Graphs, descriptions and graphing instructions of the functions’ **FIVE** **transformations**.
3. **Mathematical (algebraic) problems** of the function. These could include various algebraic or graphical processes for solving the functions, or derivations or limits associated with them.
4. Detailed **contextual problems** or applications of the function. These must be sourced. (Chapter and Section introductions in the texts have great ideas). **At least THREE functions must have a contextual example using data you collected. Evidence must be provided of the data you collected (ex. picture, video, link).**
5. **Extras** include rules or laws associated with the function as well as algebraic points of interest. (ex. log and exponent laws, trig identities, factoring rules, the unit circle, logarithmic spirals, deriving the quadratic formula, graphing arithmetic sequences, an algebraic method for approximating ***e*** etc.)

**\*\*Mathmatical and Contexual problems must be original and not ones used in class.\*\***

***Failure to complete this project means an incomplete credit. Failure to meet the final deadline means a loss of 40%. Failure to meet the check point(s) means a loss of up to 3 marks.***

**Rubric:**

**This project is worth 15% of the final mark for Pre-Calculus 12B**

**Format (0.5 marginal, 1.0 acceptable, 2.0 superior) \_\_\_\_\_\_\_\_\_\_**

**Check points (three functions must be *completed* for each check point, these are NOT drafts):**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1.0 \_\_\_\_\_\_\_\_\_\_**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **1.0 \_\_\_\_\_\_\_\_\_\_**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **1.0 \_\_\_\_\_\_\_\_\_\_**

**Final Deadline:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Content 10.0 (quarter value = marginal, half value = acceptable, full value = superior)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Function** | **Basic Graph and**  **Characteristics 2** | **Five Transformations**  **2** | **Extras**  **2** | **Mathematical Problems**  **2** | **\*\*Contextual Problems 3 with Real Data**  **2** |
| Linear |  |  |  |  |  |
| Quadratic |  |  |  |  |  |
| Absolute Value |  |  |  |  |  |
| Radical |  |  |  |  |  |
| Polynomial |  |  |  |  |  |
| Trigonometric |  |  |  |  |  |
| Exponential |  |  |  |  |  |
| Logarithmic |  |  |  |  |  |
| Natural logarithm |  |  |  |  |  |
| Rational |  |  |  |  |  |

**\*\*Must be sourced**

**TOTAL: \_\_\_\_/15**